Role of Choice and Customization on Users' Interaction with Embodied Conversational Agents

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Embodied Conversational Agents (ECAs)

- ✓ Have human-like appearance
- ✓ Provide assistance for users
- ✓ Utilize conversational interaction

MIT

DFKI

USC

Controversy over ECA Interfaces

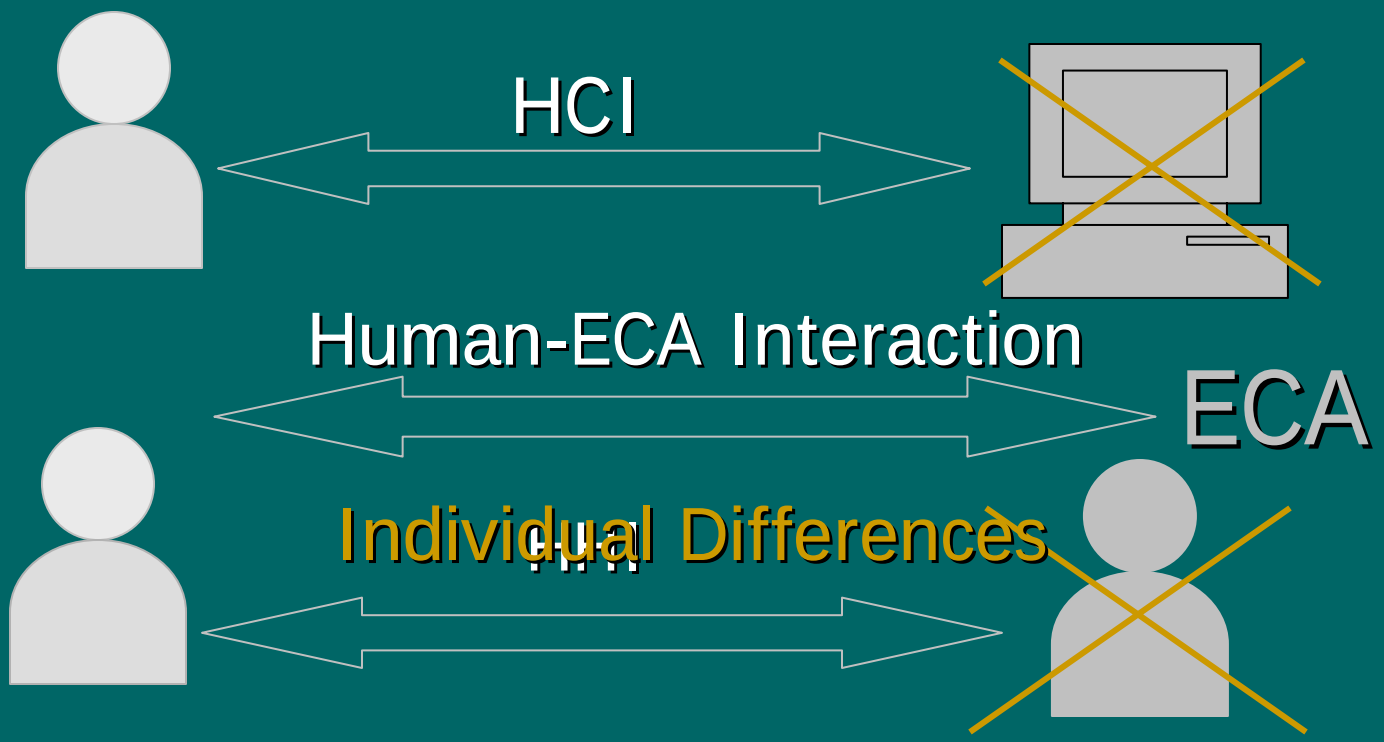
Looks like a zombie

Sounds mechanical

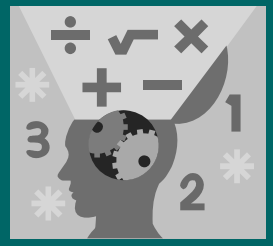
Natural, f[illegible]ble and fun ?

Gives stupid answers

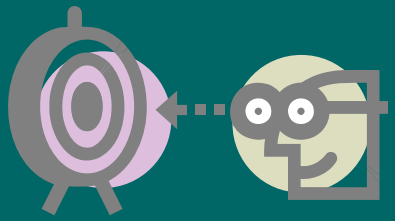
HCI ≠ Human-ECA Interaction ≠ HHI



Technology Driven vs. User Centered



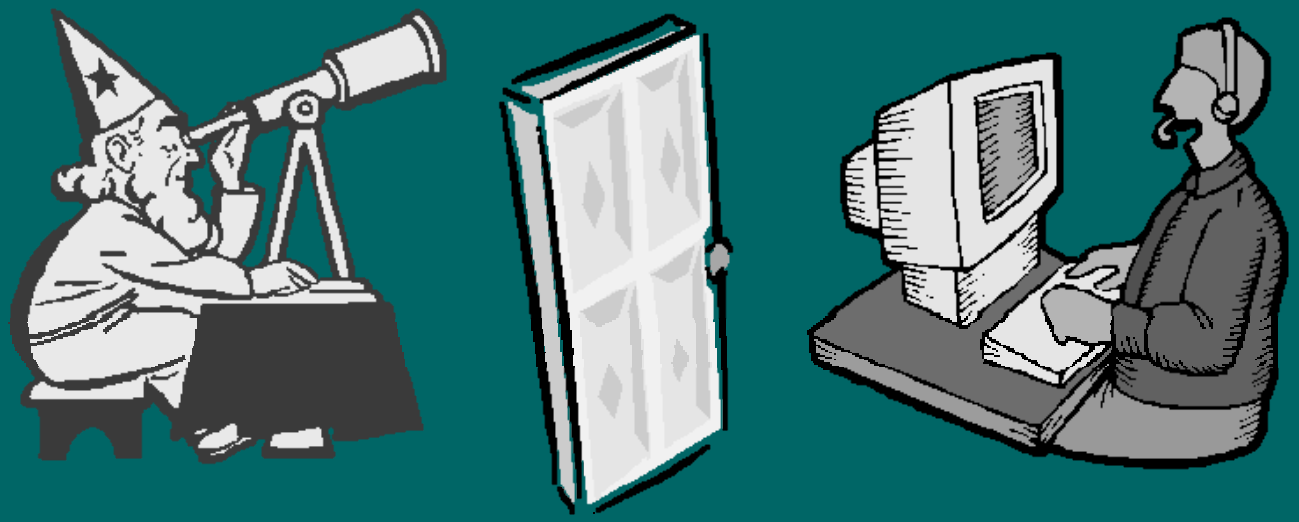
- Computational model
  - Models of reasoning, conversation, emotion, gaze, gesture



- User experience
  - Users' expectation, perception, behavior and performance when they interact with computer agents

Approach: Wizard of Oz Experiment

Kelley, 1984



Factor **OUT** or **IN** AI problems

Choice and Customization Study

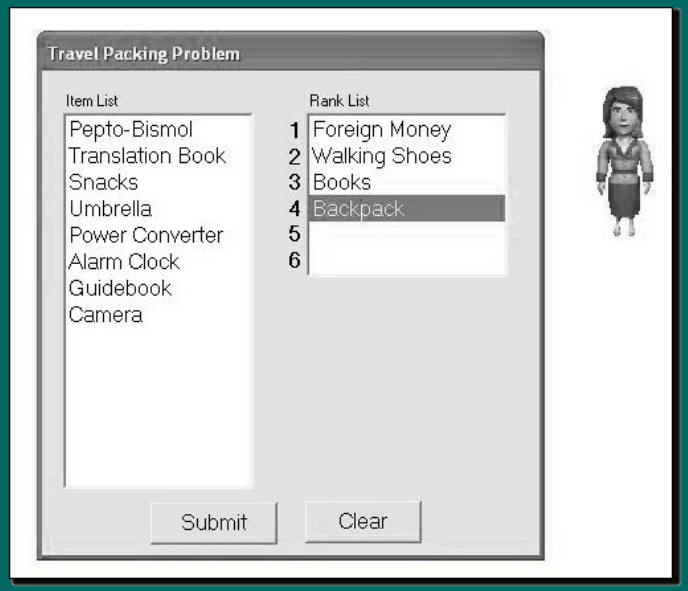
V.S.

One size fits all Your wish is my command

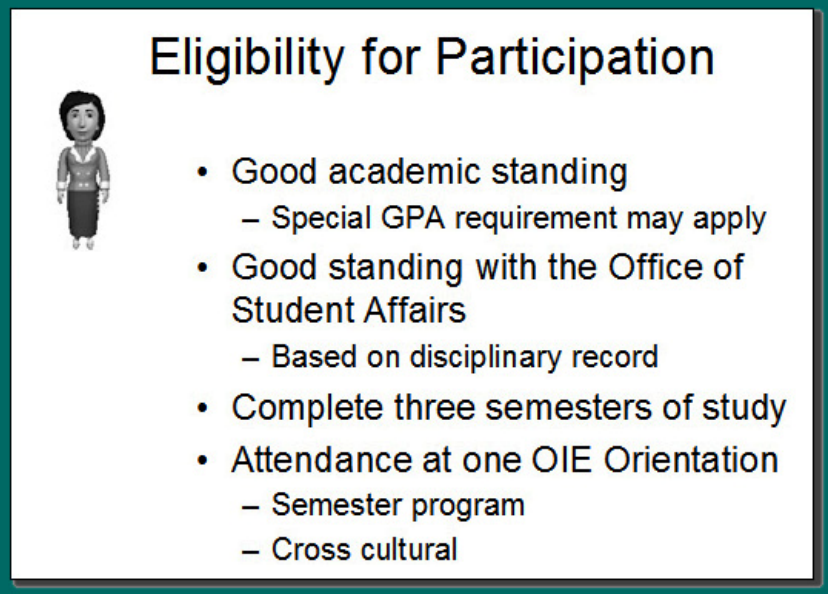
Questions needs to be addressed

- Gaming and social networking, but any other domain, any ‘real’ value?
- Choice probably better, but how much customization and how strong the effect?

Study Tasks



International trip packing



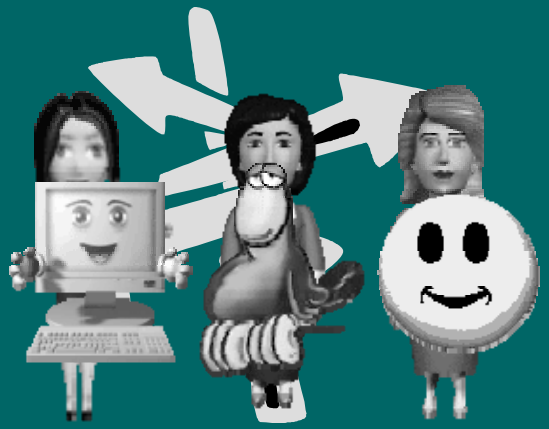
Study abroad program selection

Influence and motivate

Study Conditions: 2x2

I have been in the travel industry as an international travel **consultant** for more than **ten years**.

Well qualified



Chosen

I got my first job as a **receptionist** at a travel agency **last week**.

Poorly qualified

X

Assigned

Study Conditions: 2x2

I have been in the travel industry as an international travel **consultant** for more than **ten years**.

Well qualified

Chosen

Illusion!

I got my first job as a **receptionist** at a travel agency **last week**.

Poorly qualified

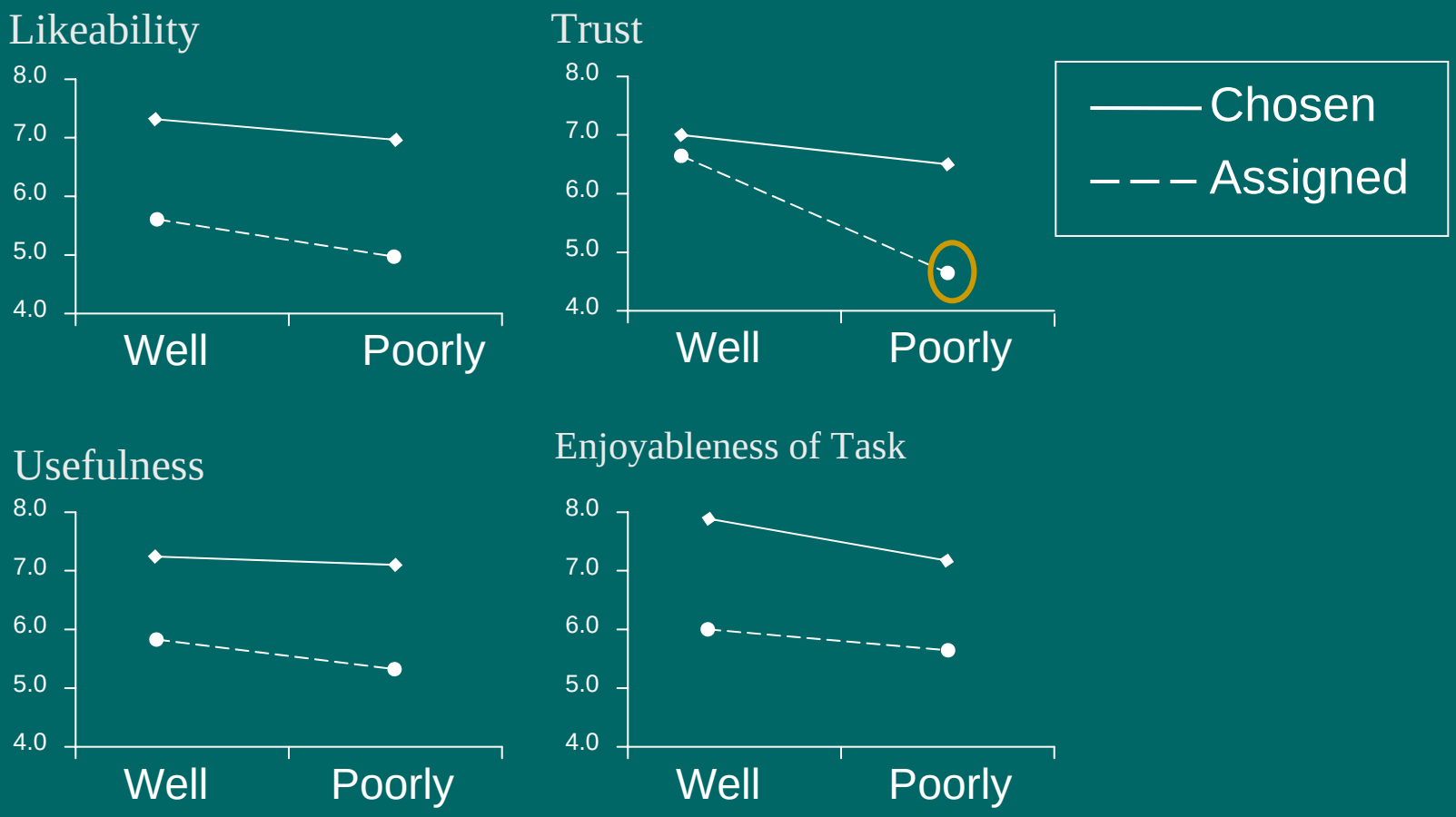
Assigned

Measure: Subjective Impressions

Indexes created from questionnaire assessing participants' perception of the agent, the task and the interaction:

likeability, trust, usefulness, enjoyableness

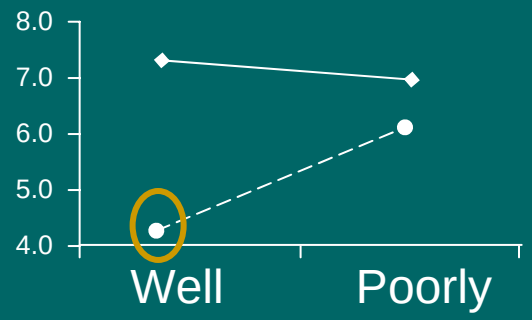
Results: Trip Packing Task



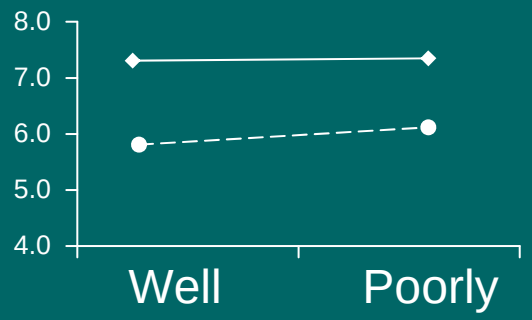
Note: personality and computer anxiety scale were used as covariants

Results: Study Abroad Program Task

Likeability



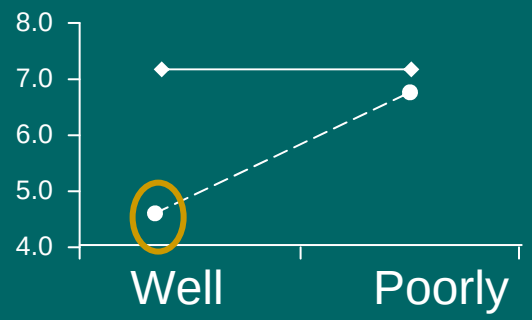
Usefulness



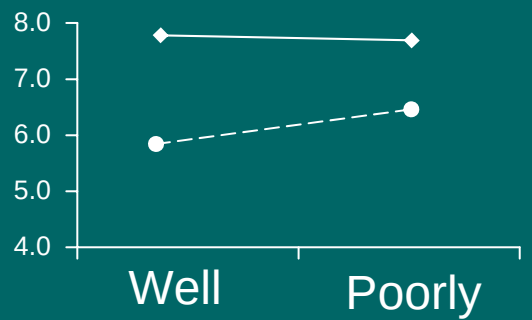
Chosen

Assigned

Satisfaction of interaction



Interest of task domain



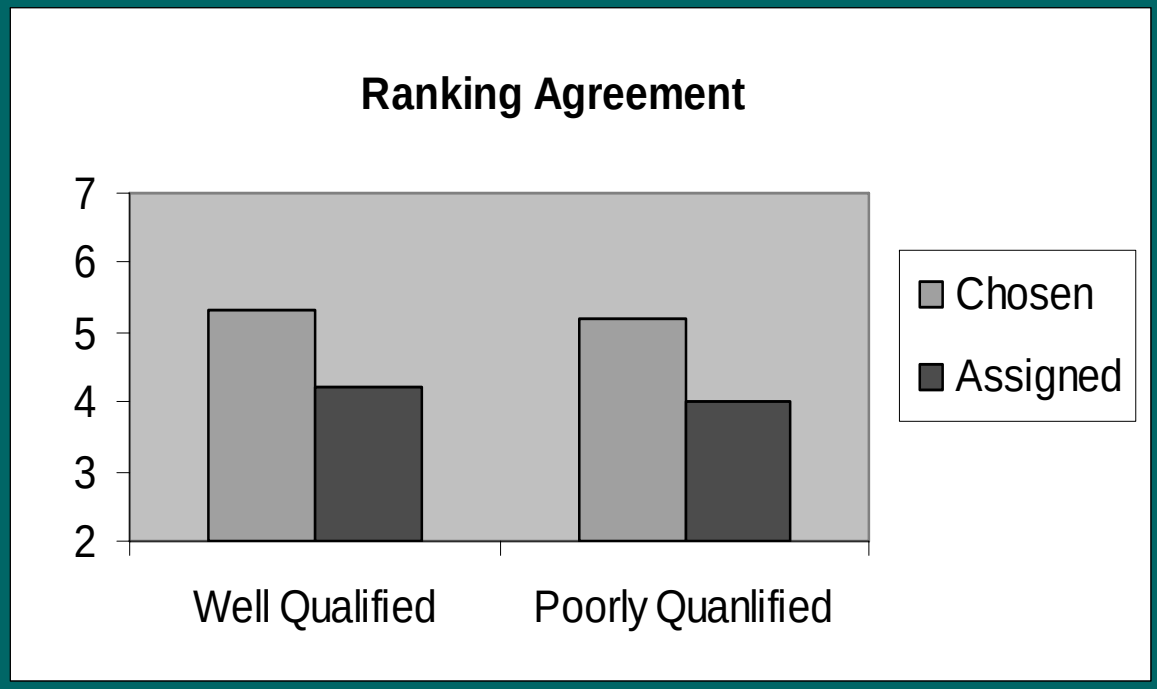
Note: personality and computer anxiety scale were used as covariants

Measure: Persuasion Effect

Items to pack in travel luggage:

Participant's rankings		Agent's rankings
1 Translation Book		1 Guidebook
2 Umbrella		2 Umbrella
3 Camera	V.S.	3 Alarm Clock
4 Guidebook		4 Translation Book
5 ~~Walking Shoes~~		5 Camera
6 Power Converter		6 Power Converter

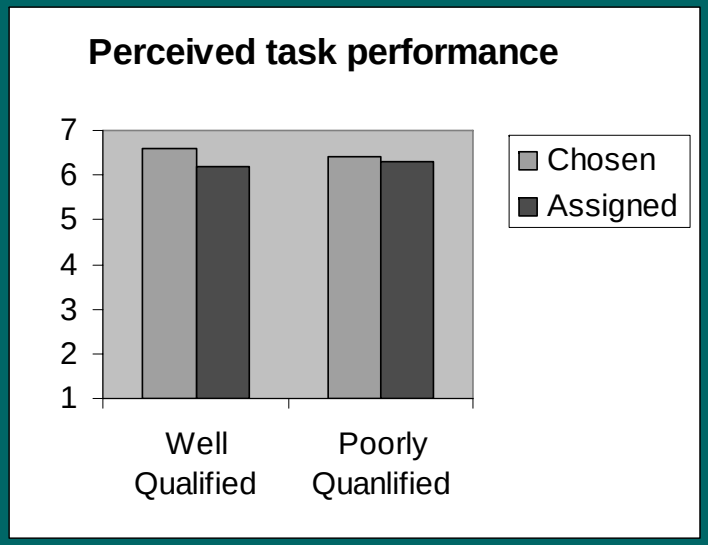
Result: Persuasion Effect

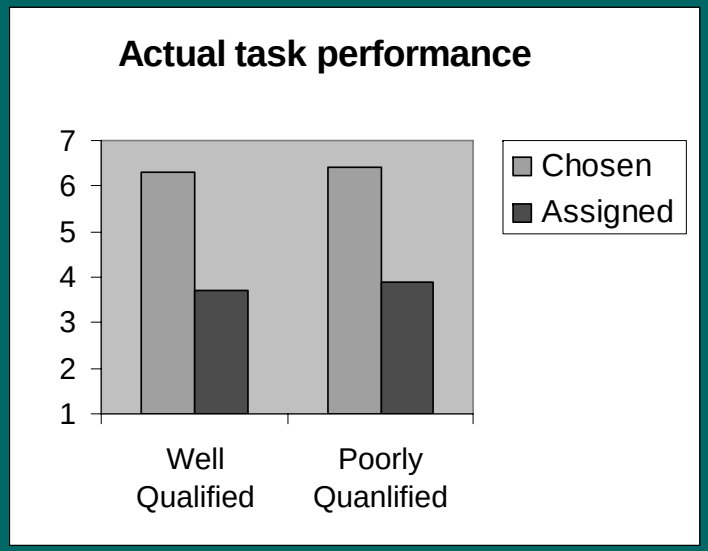


Note: personality and travel experience score were used as covariants

Result: Objective Task Performance

Study abroad program selection





Key to success: ask more!

Result: Desire to Influence

Participants in the **ASSIGNED** conditions:

"Ok", "No", "I don't know", "Reasonable", "Somewhat."

Participants in the **CHOSEN** conditions:

"I agree with that. It makes sense. I would say the translation book probably should not be at the first place. Yeah, I forgot about the backpack. Excellent idea. I can definitely see your point. I did not think of that."

"Yes, I understand that. I was just thinking that maybe because I can find ATM machines there. But it (the ECA's argument about cash being important) makes sense."

Result: Affective Feeling

Participants in the **ASSIGNED** conditions:

"Useful? She's like 'This is what I think, like it or not!'" …

Participants in the **CHOSEN** conditions:

"I felt the agent was listening to me and decided whether or not my reasoning was good reasons for why I choose the items that I did. I can tell that [her responses were] based on my responses and [she] responded to my responses. It was definitely taking in what I spoke, using it for feedback." …

Result: Contrasting Views

ASSIGNED conditions

*"Lecturing like a **teacher** rather than your big sister."*

*"Methodical like a **librarian**. More getting down to business than striking you with conversation. Just eliminated the choices."*

CHOSEN conditions

*"Friendly, encouraging and respectfully like a **teacher**."*

*"Kind of like a **librarian**, knows her stuff, helpful, attentive, and ready to assist."*

Implications for Design

- ECAs can be both effective and affective
  - Pervasion effect
  - Motivation effect
- There are major differences in people's preference and perception over features
  - Perceptions are hard to anticipate
  - Simple user selection **process** may help